FRESNO

Where half the world's Raisins come from.

A Forty
Million
Dollar
Crop
Divided
Among
Fourteen
Thousand
Prosperous
Growers

in "The Garden of the Sun"

FRESNO COUNTY is the world's greatest raisin producing center. For more than seventeen years the geographical hub of California has maintained this position. For centuries preceding 1904, Spain was the leading and almost the only raisin producing country of the world. In that year Fresno passed Spain in raisin raising and with each year since has increased its lead, until now Fresno's dried grape production is more than three times that of the European country and approximately one-half of the world's total. Other competitors on a smaller scale are Asia Minor and Australia.

Excepting limited quantities grown in Arizona, all of the raisin crop of the United States comes from California. Ninety-five per cent of the total is produced in the eight counties of the San Joaquin Valley. A fraction over seventy per cent of the whole total again is grown in Fresno County, amounting in 1919 to 141,340 tons, in 1920 to 140,500 tons, and in 1921 to 108,000 tons, the drop last year being due to very unusual frost conditions.

The importance of the raisin industry to the Fresno section can be gauged by the fact that the growers there through the cooperative marketing organization received for their crop over $26,858,000.

California's First Raisins.

The first raisin grape, it is believed, was introduced in California in the year 1851, by Colonel Augustin Haraszthy of San Diego. The colonel first raised muscatel vines from seeds of the malaga variety. His vineyard experiments extended over many years; in 1861 he imported from Spain the muscatel gordo blanco, and developed this variety rather extensively. Meanwhile, in 1855, A. Delmas imported the muscat of Alexandria and planted a vineyard near San Jose.

According to a report of the California State Agricultural Society, raisins were exhibited by Dr. J. Strentzel at the State Fair in 1863, the variety shown being the white muscat of Alexandria.

The raisin industry in the San Joaquin Valley had its beginning in 1873, when T. F. Eisen, a pioneer grape grower of the Fresno district, discovered accidentally that the dried muscats were edible. Other growers in the Fresno district proved that they were also marketable in this condition. One of these pioneers was T. C. White, foreman of a vineyard owned by three school teachers, of whom the business head was Miss Lucy Hatch, still living in Fresno and known as "the mother of the raisin industry." W. S. Chapman also experimented suc-

cessfully along these lines in his vineyard in the Central California Colony at Fresno. What is certainly on record is that Fresno dried muscatels were sold by fancy grocers of San Francisco in 1877, and from that time this district has been pre-eminently associated with the development of the raisin industry.

Raisin Grape Varieties.

The varieties of raisin grapes are few in number, the white muscat of Alexandria and the muscatel gordo blanco holding first place among the seed kinds, while malagas and fehrzagos are used to a small extent. The seedless varieties are the sultana and the sultanina, commonly called Thompson seedless, and both grown extensively near Smyrna in Asia Minor (where the Fresno figs also find their origin). These are all distinct from the Zante currant, the product in which Greece specializes, and also grown in Fresno and other San Joaquin Valley counties.

The name "Thompson seedless" is traced back to W. Thompson, Sr., of Yuba City, who in 1878 planted cuttings that had reached an eastern shipper from Constantinople. Sultaninas, now common in the Fresno district, were introduced there on a commercial scale by W. R. Nutting of Del Rey about 25 years ago.

Growth of Production.

The growth of the raisin industry in California has been progressive as to production but checkered as to prosperity, until the last few years. Joint

processing, packing and marketing under a cooperative association was the magic wand that waved the industry out of financial bankruptcy; there was never anything the matter with the production end of the business.

Away back in 1879 the one million mark in raisin production in California was passed; six years later it had increased to nine million pounds. During the last nine years the production has tripled, reaching in 1920 a total of 175,000 tons or 350,000,000 pounds, of value about forty-four million dollars. Divided among the fourteen thousand growers in the state this represented an individual return of a little better than $3,000 or at the rate of 14½ cents a pound to the ninety per cent of the growers in the cooperative association. Even in 1921, with a short crop due to early frosts, the production was over 120,000 tons, with again very satisfactory prices, despite the world-wide trade depression.

A sure indication of the growers' faith in the future of the industry is in the fact that of Thompson seedless alone the new plantings in the three years from 1919 to 1921 inclusive have amounted to 63,200 acres. Throughout the state the total raisin grape acreage in 1921 was 309,920, of which roughly three-fifths was in Fresno and one-fifth in Tulare County.

Anticipating the Future.

Nearly one-third of the whole total raisin acreage represents new plantings since 1919, which at the normal yield is estimated to bring up the 1924 crop to 350,000 tons, or more than double that of 1920. To meet this steadily increasing production the co-operative association of growers known as

the Sun Maid Raisin Growers (formerly the California Associated Raisin Company) is carrying on an active advertising and sales campaign in the United States, Canada, South America, Britain, Scandinavia, Japan and other importing countries. As some indication that there is plenty of marketing scope for California's growing raisin production, it is known that the per capita home consumption in the United States is not much more than one-half what it is in Britain and other countries which do not grow raisins, but have the appetite for them well developed.

An idea of comparison between the production in California and its chief competitor may be had: the Smyrna (Turkey) crop last year was closely estimated at under 33,000 tons, or about one-quarter of the American crop.

An interesting feature of the California industry is that within the last several years new plantings of the so-called Thompson seedless have brought the total of those vines well in excess of the originally planted muscats, for a long time the supreme raisin grape. The big advantage of the sultanina is of course that it requires no seeding and can be marketed just as it is sun-dried. The future tremendously enlarged market for this variety is indicated by the more than successful experiment of placing 5-cent packages of "Little Sun-Maids," as they are popularly known, in candy, tobacco and other stores, and nationally advertising them as a between-meal, fatigue-forestalling confection.

Cooperation Spells Success.

The history of the raisin industry in California up to 1912 is one drawn-out story of long-deferred

hopes and heart-breaking failures—all, be it remembered, connected with the marketing end. Nature, always kind to Golden State growers after they had learned the lessons of irrigation, has made the center of the state in particular a pre-eminently tropical fruit and vine land. Grapes, like other rich fruits of the soil, just grew and grew; and in the case of the grapes when they grew too plentifully, nature showed how they could be dried in the sun, right between the rows of the vineyards, and could be shipped perfectly ready for table or for cooking anywhere in the world.

The whole trouble lay at the marketing end: There never was any stable market; the growers were at the mercy of indifferent packers who gambled at will and paid to the producers such "return" as they pleased. In 1909 the price of muscats dropped to less than a cent a pound, and in these darkest hours of the industry, through the foresight and persuasion and patient planning of a few of the pioneers, the growers after several disappointing failures got together and formed the "California Associated Raisin Company." The first big task facing this organization was to stabilize the market for raisins so that the growers might be reasonably sure of a living price for their product. After much hard work, the telling of which would take too long here, the association succeeded in saving the industry from ruin and putting it upon a sound and prosperous basis. Compare, for instance, last year's fourteen cents a pound return with the 1909 packers' pourboire of three-quarters of a cent per pound!

Raisin Association's Growth.

The Sun-Maid Raisin Growers, as the association is now known, is a co-operative organization of over 13,000 growers. It markets ninety per cent of all the raisins produced in the United States. It owns and operates forty-three packing plants, delivery stations and warehouses. It maintains a score of divisional offices in the United States, Canada, Europe and the Orient to link up its extensive sales force.

The association is a stock company incorporated under the laws of California, with an authorized capitalization of $5,000,000, of which $2,851,525 is paid in. It is controlled by a board of thirty trustees, elected by stockholders from each raisin district and holding office for seven years; they elect annually a board of seven directors. About 90 per cent of the stock is held by growers, the balance being owned by merchants and others intimately associated with the success of the industry. Every grower whose crop is under contract to the association takes a small amount of stock as part payment on his annual deliveries, the payment not to exceed $4 per ton. The average investment in stock is about $200, and the dividends are limited to 8 per cent.

The president of the Sun Maid Raisin Growers is Wylie M. Giffen of Fresno; the other directors being Hector Burness, Fresno; F. H. Wilson, Dinuba; A. G. Wishon, Fresno; H. H. Welsh, Fresno; Milo L. Rowell, Fresno, and W. V. Buckner, Hanford. The officers include Wylie M. Giffen, president; Hector Burness and F. H. Wilson vice-presidents; F. A. Seymour, general manager; Milo L. Rowell, treasurer; C. A. Murdoch, assistant general manager and secretary; R. B. Thompson, assistant secretary; Paul E. Wenall, cashier; Stanley Q. Grady, sales and advertising manager; Franklin A. Bell, advertising manager; L. R. Payne, manager inspection department; G. G. Watson, manager manufacturing department.

Dollar Value Co-operation.

The 1913 crop was the first marketed by the association; since its formation the crop has always sold for more than the cost of production and every grower has made a profit. The annual tonnage handled by the growers' company with the total price netted by each crop has been as follows:

Year	Tonnage	Value
1914	73,600	$ 5,212,270
1915	98,405	8,172,351
1916	105,100	9,976,947
1917	127,223	13,608,122
1918	149,713	16,530,045
1919	159,279	36,345,077
1920	153,750	38,369,385

Including the raisins handled by independent concerns, the total 1920 crop in California was 175,000 tons, and its value about $44,000,000.

The raisins of 1920 were handled under a contract signed in 1917 and expiring with the marketing of this crop. In 1921 raisins were handled under a new contract covering a period of 15 years, growers and company having the option of withdrawal at the end of the first three years and at the end of each two-year period thereafter.

In 1921 the Sun Maid Raisin Growers organized its own national and international sales force. Its national advertising campaign is shown by the progress of its advertising appropriation from $120,000 in 1914 to one and a half million dollars in 1921—the largest ever made on the Pacific Coast.

How Raisins Are Grown

Climatic conditions in Fresno County are ideal for the production of raisins. The raisin is a sun-dried grape and curing is altogether a sun process. In the early spring, frosts are rare when the vines are budding. A warm, dry climate in summer is needed to give the raisins a full sugar content and this is found here. In the fall, when the harvest is on the way, it is very seldom that rains occur that do any damage to the curing crop.

Rooted vines and cuttings are used for the planting of vineyards. After the ground has been prepared they are planted 8x10, 10x10 or 6x12 feet apart in properly defined rows. The land is irrigated and cultivated and the vines are pruned annually. Raisin grapes begin to produce in the third and fourth years. They reach full bearing at 4 to 7 years old, according to variety, and from then on success is obtained almost altogether by the amount of care that is given the vineyard.

The average production of a muscat raisin vineyard runs about a ton or a ton and a quarter of dried fruit to the acre, although there are vineyards that produce as high as 2½ tons to the acre. Some Thompson vineyards will produce three tons and over. It takes three to four tons of grapes to make a ton of raisins.

Methods of Pruning.

The muscat vine is pruned to spurs. By this method the body of the vine is grown to the desired height and shoots are permitted to grow from the two uppermost buds. The spur method of pruning the vines consists of building a trunk from which spring four or five arms.

The cane method is used for Thompsons. The vine is pruned to long canes and these canes are tied to stakes or strung on a trellis. The Thompson vines are trellised.

A raisin grape vine does not need a great quantity of water if the rainfall season has been normal. Usually three irrigations are ample to insure a good crop, although in many cases one or two are all that are required, and in some localities where vines are planted on sub-irrigated soil no irrigation is necessary. The territories in which raisins may be produced on sub-irrigated soil are very limited, and consequently, practically all of the raisin grape vines in Fresno County are irrigated. Good, deep plowing in the spring, and good cultivation after each irrigation are the principal requirements, aside from pruning, in producing good crops.

In the early days the drying process for raisins consisted of breaking the vine canes, thus stopping the flow of sap and the grapes were transferred into raisins while hanging on the vines. The present method consists of picking the grapes from the vines and laying them on wood or paper trays in the open where the sun has access to them.

They are exposed to the sun's rays for about ten days and then turned so that the sun strikes the other side until the grape dries down to storage conditions in the process of drying. The raisin grapes, which are green, turn to a deep purple after the grapes have been exposed on both sides to the sun for a period of ten to fifteen days. They are then placed in boxes holding about 150 to 200 pounds each and are left there for another ten days. These boxes are called "sweat boxes." This process equalizes the moisture retained by the raisins, making them soft and highly palatable.

The Seeding Process.

Muscats are generally put on the market in three different forms, as loose raisins, as clusters and as seeded raisins. The loose raisins are merely raisins that have had the stems removed. A brief account of the process by which seeded raisins are prepared will not be without interest.

The raisins are first subjected to a dry temperature of 140° F. for three to five hours, immediately after which they are subjected to a chilling process which enables the cap stems to be removed without difficulty. They are then passed through cleaning and brushing machines which remove absolutely every particle of dust; they are then taken automatically by elevators to a room where they are thoroughly washed and subjected to 212° F. heat, which brings the fruit back to its normal condition. The raisins are then passed through seeding machines, each of which has a capacity of from 10 to 12 tons daily.

The raisins are pressed between rubber or similarly surfaced rollers which at first flatten the berries and then press the seeds to the surface, where a saw roller gets the seeds between its teeth, deftly removing them from the fruit. The seeds are removed from the roller by a whisking device and are then sent along to a seed receptacle.

The raisins, now devoid of their seeds, pass down chutes to the packing tables, where they are washed and packed into one-pound cartons. The waste from seeding and grape stemming amounts to about 10 to 12 per cent of the original weight of the raisins, according to the conditions or quality of the raisins.

Counties Growing Raisin Grapes

The following table, compiled by the Sun-Maid Raisin Growers, shows how the raisin acreage in California was distributed in 1921:

County	Muscats	Malagas	Thompsons	Sultanas	Fehrzagos and Black Grapes
San Joaquin ..	15	50	186	....	280
Stanislaus	186	1458	3102	52	297
Merced	90	2007	4146	23	430
Madera	3015	1827	10016	379	2660
Fresno	73512	20058	77980	7499	7282
Tulare	12966	6885	30760	5041	892
Kings	11199	298	2773	748	242
Kern	1640	1036	5475	82	55
So. California ..	4095	6	47	292	679
No. California .	139	25	7542	363	90
Totals (acres)	106857	33650	142027	14479	12907

Grand total, 309,920 acres.

Requirements for Growing Raisin Grapes and Production Costs

Climatic Requirements—

Freedom from frequent late spring frosts, conditions for early ripening and freedom from heavy fall rains during ripening and harvest. Four to six weeks of dry weather usually required following picking to permit proper drying.

Soil Requirements—

Deep, fertile loam, the heavier soils are better for Muscats and the lighter are usually considered better for Sultanas and Thompsons. Freedom from alkali and standing water during growing season.

Water Requirements—

Grape secures color and quality when grown with sufficient rather than excess water supply.

Calendar of Operations—

Irrigation—Usually two irrigations; ordinarly given in late spring (April) and in July.

Dust Spraying—April-June—Sulphured for mildew one, two or three times.

Pruning—December-March. Muscats pruned to short spurs. Sultanas and Thompsons to fruit canes, and renewal spurs.

Fertilizing—Occasionally a little fertilizing done, principally as applications of grape pomace, green manures, stable manures and lime.

Cultivating—January-March. Plowed, cross-plowed and harrowed into good shape. Cultivated four times at monthly intervals, beginning in April. Hoe one time around vine in May or June.
Fumigating—None.
Thinning Fruit—Not done.

Harvest—

Time—August 20-October 1.
Method—Clusters cut by hand.
Preparing for Market—Spread on trays holding 22 lbs. (2x3 feet), placed in rows, cured, sorted and delivered to raisin packing house. In the Sacramento Valley the Sultanas are dipped and dried in a drying yard.
Dry 3½ or 4 to 1, depending on amount of sugar at time of picking.

Yields—

Good—1½ tons raisins.
Usual—1 ton raisins.

Commercial Sections—

Counties tributary to Fresno, middle Sacramento Valley, San Diego and San Gabriel Valley.

Value of Land—Raw—

	Per Acre
High	$ 300.00
Low	125.00
Usual	200.00

Developed Vineyards—

High producing Muscats	1,200.00
Usual producing Muscats	700.00
High producing Thompsons	$1,000 to 1,500.00
Usual producing Thompsons	800.00
Irrigation system or water right included in price of land—	
Clearing, leveling and preparing	25.00
Vines (rooted)	20.00
Setting out	15.00
Replanting (vines and labor)	5.00

Annual Cost from Setting-out to Self-sustaining Age—

Irrigation and cultivation	15.00
Stakes or trellis (first year) (Thompsons only)	25.00
Tying (Thompsons only)	4.00
Pruning (after first year)	4.00
Sulphuring (after first year)	1.25
Hoeing (after first year)	2.00

Annual Upkeep After Maturity—

Sulphuring 2 times	2.50
Irrigation and Cultivation	15.00
Pruning and burning brush—Muscats	4.50
Pruning and burning brush—Thompsons	10.00
Suckering	2.00
Tying—Thompsons	4.00
Hoeing—Muscats	2.00
Hoeing—Thompsons	4.00

Cost of Harvest—

	Per Dry Ton
Gathering ($7-16)	$ 15.00
Handling trays	1.50
Turning and stacking	1.50
Packing in lugs	1.50
Hauling (4 miles)	1.75

Market Value of Yield—

	Per Lb.
High	.11½
Low	.10
Average	.10½

Taxes and Insurance—

	Per Acre
To Maturity	$ 1.50
After Maturity—Average land	2.00
Good land	3.00

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Views of Raisin Packing Plants

Fresno County
Chamber of Commerce
FRESNO, CALIFORNIA.